1. $H_0: \mu_1 = \mu_2$, $\mu_1 - \mu_2 = 0$
   $H_1: \mu_1 \neq \mu_2$

2. $H_0: \mu = 16$
   $H_1: \mu \neq 16$

3. $H_0: \mu_d = 0$
   $H_1: \mu_d \neq 0$

Diff: $-60, -10, 160, 260, 130, 310, 520, -5\ldots, 900$

$\bar{d} \pm t_{\alpha/2} \frac{s_d}{\sqrt{n}}$

$\bar{d} = 240$

$s_d = 311$

$t = \frac{\bar{d} - 0}{s_d / \sqrt{n}} = \frac{240}{311/\sqrt{9}}$, $df = n - 1 = 8$

$= 2.31$

p-value $\approx (0.025) \times 2 = .05$ (a bit lower)

4. $H_0: p = .10$
   $H_1: p \neq .10$

$\hat{p} = \frac{48}{345} \approx 0.139$

$z = \frac{\hat{p} - p_0}{\sqrt{p_0 q_0 / n}} = \frac{.139 - .10}{\sqrt{.10(.9)/345}} = 2.41$

p-value $= 2P(Z > 2.41) = 2F(-2.41)$

$= 2 \times .008 = .016$, fairly significant

$.016 < \alpha = 0.05 \Rightarrow$ Reject H_0

$\hat{p} \pm z_{\alpha/2}\sqrt{\frac{\hat{p}\hat{q}}{n}}$ $.139 \pm 1.96 \sqrt{\frac{.139(1-.139)}{345}}$

Final: bring 3 pages of notes, tables will be provided

8. Central Limit Thm $\bar{X} \sim N\left(\mu, \frac{\sigma^2}{n}\right)$

a) $\mu = 900$ b) $\frac{\sigma}{\sqrt{n}} = \frac{50}{\sqrt{16}}$ c) $P(\bar{X} > 910) \approx$

$\approx P\left(Z > \frac{910 - 900}{50/\sqrt{16}}\right) = P(Z > 0.8)$

$= 1 - F(0.8) = 1 - .7881$

$= .2119$